

AMENDMENT OF CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1-57. (Canceled)

58. (Currently Amended) A method for providing antimicrobial activity on skin, the method comprising the steps of:

administering to skin a composition comprising

(a) an antimicrobial component consisting essentially of:

- (i) a biguanide polymer,
- (ii) an antimicrobial metallic material, and
- (iii) an optional organic compound,

which is substantially water-insoluble or can be rendered substantially water-insoluble,
wherein said water-insolubility is facilitated by the formation of a complex of said biguanide polymer and
said antimicrobial metallic material or formation of an adduct of said biguanide polymer and said organic
compound, and

(b) a carrier selected from the group consisting of a cream, a lotion, a deodorant, a spray, a gel, a
wax, an oil, an ointment, a soap, and an alcohol, and

forming a moisture-resistant film on the skin, thereby imparting a persistent antimicrobial activity on the skin.

59. (Canceled)

60. (Previously presented) The method of claim 58, wherein the biguanide polymer comprises poly(hexamethylenebiguanide), poly(hexamethylenebiguanide) hydrochloride, poly(hexamethylenebiguanide) gluconate, poly(hexamethylene-biguanide) stearate, or a derivative thereof.

61. (Canceled)

62. (Previously presented) The method of claim 58, wherein the metallic material is silver or a silver compound.

63. (Previously presented) The method of claim 62, wherein the metallic material is silver nitrate.

64. (Previously presented) The method of claim 62, wherein the metallic material is silver iodide.

65. (Previously presented) The method of claim 58, wherein the biguanide polymer is present as an adduct with a substantially water-insoluble organic compound.

66. (Original) The method of claim 65, wherein the substantially water-insoluble organic compound comprises a reactive member selected from the group consisting of carbodiimide, isocyanate, isothiocyanate, succimidyl ester, epoxide, carboxylic acid, acid chloride, acid halide, acid anhydride, succimidyl ether, aldehyde, ketone, sulfonyl chloride, sulfonyl halide, alkyl methane sulfonate, alkyl trifluoromethane sulfonate, alkyl paratoluene methane sulfonate and alkyl halide.

67. (Original) The method of claim 65, wherein the substantially water-insoluble organic compound is an epoxide selected from the group consisting of methylene-bis-N,N-diglycidylaniline, bisphenol-A-epichlorohydrin and N,N-diglycidyl-4-glycidyloxyaniline.

68. (Previously presented) The method of claim 58, wherein the biguanide polymer comprises a chemical group capable of forming a covalent bond.

69. (Original) The method of claim 68, wherein the covalent bond can be generated at room temperature.

70. (Original) The method of claim 68, wherein the chemical group is selected from the group consisting of an amino group, a carboxylic acid group, a hydroxyl group, or a sulfhydryl group.

71. (Original) The method of claim 68, wherein the chemical group is selected from the group consisting of carbodiimide, isocyanate, isothiocyanate, succimidyl ester, epoxide, carboxylic acid, acid chloride, acid halide, acid anhydride, succimidyl ether, aldehyde, ketone, sulfonyl chloride, sulfonyl halide, alkyl methane sulfonate, alkyl trifluoromethane sulfonate, alkyl paratoluene methane sulfonate and alkyl halide.

72-88. (canceled)

89. (Currently Amended) A method for providing antimicrobial activity on skin, the method comprising the steps of:

administering to skin a composition comprising

(a) an antimicrobial component consisting essentially of:

- (i) an antimicrobial organic polycationic polymer;
- (ii) an antimicrobial metallic material and
- (iii) an optional organic compound,

which is substantially water-insoluble or can be rendered substantially water-insoluble,
wherein said water-insolubility is facilitated by the formation of a complex of said antimicrobial organic polycationic polymer and said antimicrobial metallic material or formation of an adduct of said antimicrobial organic polycationic polymer and said organic compound, and

(b) (iii) a carrier selected from the group consisting of a cream, a lotion, a deodorant, a spray, a gel, a wax, an oil, an ointment, a soap, and an alcohol or a skin-compatible component selected from the group consisting of emollients, thickeners, humectants, skin moisturizing agents, and surfactants, and

forming a moisture-resistant film on the skin, thereby imparting a persistent antimicrobial activity on the skin.

90. (Canceled)

91. (Previously presented) The method of claim 110, wherein the biguanide polymer is present as an adduct with a substantially water-insoluble organic compound.

92. (Currently Amended) A method for providing antimicrobial activity on skin, the method comprising the steps of:

administering to skin a composition comprising, in a dermal antiseptic formulation, an antimicrobial component consisting essentially of:

- (i) an antimicrobial organic polycationic polymer and,
- (ii) an antimicrobial metallic material, and
- (iii) an optional organic compound,

which is substantially water-insoluble or can be rendered substantially water-insoluble
wherein said water-insolubility is facilitated by the formation of a complex of said antimicrobial organic polycationic polymer and said antimicrobial metallic material or formation of an adduct of said antimicrobial organic polycationic polymer and said organic compound, and

forming a moisture-resistant film on the skin, thereby imparting a persistent antimicrobial activity on the skin,

wherein the dermal antiseptic formulation is selected from the group consisting of surgical scrub formulations, pre-operative skin preparations, healthcare personnel handwashes, antiseptic handwashes, antimicrobial soaps, antimicrobial creams, antimicrobial hand sanitizers, antimicrobial deodorants, antimicrobial lotions, and antimicrobial gels.

93. (Currently Amended) A method for providing antimicrobial activity on skin, the method comprising the steps of:

administering to skin a composition comprising

(a) an antimicrobial component consisting essentially of:

- (i) a biguanide polymer,
- (ii) an antimicrobial metallic material and
- (iii) an optional organic compound,

which is substantially water-insoluble or can be rendered substantially water-insoluble,
wherein said water-insolubility is facilitated by the formation of a complex of said biguanide polymer and said antimicrobial metallic material or formation of an adduct of said biguanide polymer and said organic compound, and

(b) a skin-compatible component selected from the group consisting of emollients, thickeners, humectants, skin moisturizing agents, and surfactants, and

forming a moisture-resistant film on the skin, thereby imparting a persistent antimicrobial activity on the skin.

94. (Previously Presented) The method of claim 93, wherein the biguanide polymer is present as an adduct with a substantially water-insoluble organic compound.

95. (Canceled)

96. (Currently Amended) A method for providing antimicrobial activity on skin, the method comprising the steps of:

administering to skin, by spreading or immersion, an antimicrobial a-composition consisting essentially of comprising:

- (i) a biguanide polymer,
- (ii) an antimicrobial metallic material, and
- (iii) an optional organic compound,

which is substantially water-insoluble or can be rendered substantially water-insoluble, wherein said water-insolubility is facilitated by the formation of a complex of said biguanide polymer and said antimicrobial metallic material or formation of an adduct of said biguanide polymer and said organic compound, and

forming a moisture-resistant film on the skin, thereby imparting a persistent antimicrobial activity on the skin.

97. (Previously Presented) The method of claim 96, wherein the biguanide polymer is present as an adduct with a substantially water-insoluble organic compound.

98. (Currently Amended) A method for providing antimicrobial activity on skin, the method comprising the steps of:

administering to skin, by spreading or immersion, an antimicrobial a-composition consisting essentially of comprising:

- (i) an antimicrobial organic polycationic polymer and
- (ii) an antimicrobial metallic material and
- (iii) an optional organic compound,

which is substantially water-insoluble or can be rendered substantially water-insoluble, wherein said water-insolubility is facilitated by the formation of a complex of said antimicrobial organic polycationic polymer and said antimicrobial metallic material or formation of an adduct of said antimicrobial organic polycationic polymer and said organic compound, and

forming a moisture-resistant film on the skin, thereby imparting a persistent antimicrobial activity on the skin.

99. (Previously presented) The method of claim 58, wherein the film is sweat-resistant.

100. (Previously presented) The method of claim 58, wherein the film does not leach into a contacting aqueous solution.

101. (Previously presented) The method of claim 58, wherein the metallic material is selected from the group consisting of a metal, a metal salt, a metal complex, a metal alloy, and combinations thereof.

102. (Previously Presented) The method of claim 58, wherein the metallic material binds to cellular proteins of microorganisms and is toxic to microorganisms.

103. (Currently Amended) A method for providing antimicrobial activity on skin, the method comprising the steps of:

administering to skin a composition comprising

(a) an antimicrobial component consisting essentially of:

(i) a biguanide polymer;

(ii) an antimicrobial metallic material comprising a metal selected from the group consisting of a silver, zinc, cadmium, lead, mercury, antimony, gold, aluminum, copper, platinum, and palladium, and

(iii) an optional organic compound,

which is substantially water-insoluble or can be rendered substantially water-insoluble, wherein said water-insolubility is facilitated by the formation of a complex of said biguanide polymer and said antimicrobial metallic material or formation of an adduct of said biguanide polymer and said organic compound,

wherein the metallic material comprises a metal selected from the group consisting of a silver, zinc, cadmium, lead, mercury, antimony, gold, aluminum, copper, platinum, and palladium; and

(b) a carrier selected from the group consisting of a cream, a lotion, a deodorant, a spray, a gel, a wax, an oil, an ointment, a soap, and an alcohol, and

forming a moisture-resistant film on the skin, thereby imparting a persistent antimicrobial activity on the skin.

104. (Previously Presented) The method of claim 103, wherein the biguanide polymer is present as an adduct with a substantially water-insoluble organic compound.

105. (Currently Amended) A method for providing antimicrobial activity on skin, the method comprising the steps of:

administering to skin a composition comprising

(a) an antimicrobial component consisting essentially of:

(i) an antimicrobial organic polycationic polymer;

(ii) an antimicrobial metallic material comprising a metal selected from the group consisting of a silver, zinc, cadmium, lead, mercury, antimony, gold, aluminum, copper, platinum, and palladium; and

(iii) an optional organic compound,

which is substantially water-insoluble or can be rendered substantially water-insoluble,

wherein said water-insolubility is facilitated by the formation of a complex of said antimicrobial organic polycationic polymer and said antimicrobial metallic material or formation of an adduct of said antimicrobial organic polycationic polymer and said organic compound,

wherein the metallic material comprises a metal selected from the group consisting of a silver, zinc, cadmium, lead, mercury, antimony, gold, aluminum, copper, platinum, and palladium; and

(b) (ii) a carrier selected from the group consisting of a cream, a lotion, a deodorant, a spray, a gel, a wax, an oil, an ointment, a soap, and an alcohol, or a skin-compatible component selected from the group consisting of emollients, thickeners, humectants, skin moisturizing agents, and surfactants, and

forming a moisture-resistant film on the skin, thereby imparting a persistent antimicrobial activity on the skin.

106. (Previously Presented) The method of claim 105, wherein the organic polycationic polymer is a biguanide polymer.

107. (Previously Presented) The method of claim 105, wherein the biguanide polymer is present as an adduct with a substantially water-insoluble organic compound.

108. (Previously Presented) The method of claim 105, wherein the administering is done by spreading or immersion.

109. (Previously Presented) The method of claim 105, wherein the formulation is dermal antiseptic formulation selected from the group consisting of surgical scrub formulations, pre-operative skin preparations, healthcare personnel handwashes, antiseptic handwashes, antimicrobial soaps,

antimicrobial creams, antimicrobial hand sanitizers, antimicrobial deodorants, antimicrobial lotions, and antimicrobial gels.

110. (Previously Presented) The method of claim 92 wherein the organic polycationic polymer is a biguanide polymer.

111. (Previously Presented) The method of claim 103, wherein the biguanide polymer comprises poly(hexamethylenebiguanide), poly(hexamethylenebiguanide) hydrochloride, poly(hexamethylenebiguanide) gluconate, poly(hexamethylene-biguanide) stearate, or a derivative thereof.

112. (Previously Presented) The method of claim 103, wherein the metallic material is silver or a silver compound.

113. (Previously Presented) The method of claim 112, wherein the metallic material is silver nitrate.

114. (Previously Presented) The method of claim 112, wherein the metallic material is silver iodide.

115. (Previously Presented) The method of claim 104, wherein the substantially water-insoluble organic compound comprises a reactive member selected from the group consisting of carbodiimide, isocyanate, isothiocyanate, succimidyl ester, epoxide, carboxylic acid, acid chloride, acid halide, acid anhydride, succimidyl ether, aldehyde, ketone, sulfonyl chloride, sulfonyl halide, alkyl methane sulfonate, alkyl trifluoromethane sulfonate, alkyl paratoluene methane sulfonate and alkyl halide.

116. (Previously Presented) The method of claim 104, wherein the substantially water-insoluble organic compound is an epoxide selected from the group consisting of methylene-bis-N,N-diglycidylaniline, bisphenol-A-epichlorohydrin and N,N-diglycidyl-4-glycidyloxyaniline.

117. (Previously Presented) The method of claim 103, wherein the biguanide polymer comprises a chemical group capable of forming a covalent bond.

118. (Previously Presented) The method of claim 117, wherein the covalent bond can be generated at room temperature.

119. (Previously Presented) The method of claim 117, wherein the chemical group is selected from the group consisting of an amino group, a carboxylic acid group, a hydroxyl group, or a sulphydryl group.

120. (Previously Presented) The method of claim 117, wherein the chemical group is selected from the group consisting of carbodiimide, isocyanate, isothiocyanate, succimidyl ester, epoxide, carboxylic acid, acid chloride, acid halide, acid anhydride, succimidyl ether, aldehyde, ketone, sulfonyl chloride, sulfonyl halide, alkyl methane sulfonate, alkyl trifluoromethane sulfonate, alkyl paratoluene methane sulfonate and alkyl halide.

121. (Previously Presented) The method of claim 103, wherein the film is sweat-resistant.

122. (Previously Presented) The method of claim 103, wherein the film does not leach into a contacting aqueous solution.

123. (Previously Presented) The method of claim 103, wherein the metallic material comprises a metal selected from the group consisting of a silver, zinc, cadmium, lead, mercury, antimony, gold, aluminum, copper, platinum, and palladium, and is a metal, a metal salt, a metal complex, a metal alloy, or combinations thereof.

124. (Previously Presented) The method of claim 103, wherein the metallic material binds to cellular proteins of microorganisms and is toxic to microorganisms.

125. (Previously Presented) The method of claim 89 wherein the organic polycationic polymer is present as an adduct with a substantially water-insoluble organic compound which is methylene-bis-N,N-diglycidylaniline, bisphenol-A-epichlorohydrin, N,N-diglycidyl-4-glycidyloxyaniline, or a compound comprising a reactive member selected from the group consisting of carbodiimide, isocyanate, isothiocyanate, succimidyl ester, epoxide, carboxylic acid, acid chloride, acid halide, acid anhydride, succimidyl ether, aldehyde, ketone, sulfonyl chloride, sulfonyl halide, alkyl methane sulfonate, alkyl trifluoromethane sulfonate, alkyl paratoluene methane sulfonate and alkyl halide.